REMARKS

Favorable reconsideration and allowance of the present application are respectfully requested in view of the following remarks. Claims 1-63 remain pending. Claims 1 and 10 are independent.

ALLOWABLE SUBJECT MATTER

Applicants appreciate that claims 5-6, 8, 14-15, 17, 23-24, 26, 32-33, 35, 41-42, 44, 50-51, 53, 59-60 and 62 are indicated to define allowable subject matter. *See Office Action, page 6, item 5.*

SCOPE OF CLAIMS NOT ALTERED

The claims have been amended merely to address informal issues and to enhance clarity. It is intended that the claim scope is not narrowed by the amendments.

§ 102 REJECTION – LIN

Claims 1, 3, 7, 10, 12, 16, 19, 21 and 25 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Lin (US Patent 5,621,852). *See Office Action, pages 2-4, item 2.* Applicants respectfully traverse.

Independent claim 1 recites as follows:

> 1. A pitch analysis device for producing a set of pitch codebook parameters, comprising:
>
> a) at least two signal paths associated to respective sets of pitch codebook parameters, wherein:
>
> i) each signal path comprises a pitch prediction error calculating device for calculating a pitch prediction error of a pitch codevector from a pitch codebook search device; and
>
> ii) at least one of said two signal paths comprises a filter for filtering the pitch codevector before supplying said pitch codevector to the pitch prediction error calculating device of said one signal path; and
>
> b) a selector for comparing the pitch prediction errors calculated in said at least two signal paths, for choosing the signal path having the lowest calculated pitch prediction error and for selecting the set of pitch codebook parameters associated to the chosen signal path.

As will be demonstrated below, Lin cannot be relied upon to anticipate claim 1 as the Examiner alleges.

Lin describes a CELP encoder which represents the input speech samples as digital parameters comprising an LSP index, a pitch lag and gain, and a code index and gain, for digital multiplexing by transmitter 30 on communication channel 31 (column 4, lines 12-16). Lin also indicates that pitch lag and gain are derived from the input speech using a weighted

synthesis filter 16, and an adaptive codebook analysis 18 (column 4, lines 25-27).

Lin further indicates that:

- The innovation code index and gain is made adaptive to the voice of the speaker using a second weighted synthesis filter 22, and a ternary codebook analysis 24, containing an encoder ternary codebook (column 4, lines 48-51);
- The ternary codebook analysis 24 of Figure 1 is illustrated in further detail by the process flow diagram of Figure 3 (column 5, lines 32-33);
- Figure 3 illustrates an exhaustive search process for the optimum innovation sequence. All combinations of binary codevectors in binary codebooks 1 and 2 are computed for the fidelity criterion function $\Psi(i,j)$. The peak fidelity criterion function $\Psi(i,j)$ is selected at step 62, thereby identifying the desired codebook index i and codebook index j (column 6, lines 6-11); and
- As illustrated in Figure 6A-6B of Lin, the binary codevector from codebook 1 is added to the binary output from codebook 2 to form a ternary codevector constituting the innovation sequence.

In the Office Action of July 1st, 2005, the Examiner alleges that, regarding claims 1 and 10, Lin discloses an efficient codebook structure for

code excited linear prediction coding and provides support for a pitch analysis device for producing a set of pitch codebook parameters, comprising at least two signal paths associated to respective sets of pitch codebook parameters (binary codebook 1 and binary codebook 2).

As indicated hereinabove, Lin's binary codebooks 1 and 2 are not used to produce a set of pitch codebook parameters, but are used to search an optimum innovation sequence. The optimum innovation sequence is identified by indices i and j of the codebooks 1 and 2. Accordingly, the binary codebooks of Lin do not form a pitch analysis device nor do they form signal paths that are associated to respective sets of pitch codebook parameters.

It is well known that in the art of CELP coding, the pitch lag and gain and the innovation sequence are two different sets of coding parameters searched through different search processes. Since claim 1 relates to the production of a set of pitch codebook parameters, the subject matter of this claim cannot be anticipated by a technique for searching an optimum innovation sequence in a CELP encoder as taught by Lin. This alone is sufficient to distinguish claim 1 over Lin.

But in addition, Lin's binary codebooks 1 and 2 produce respective, partial contributions of a single innovation sequence. This is different from the

invention as claimed in claim 1 where each signal path is associated with a set of pitch codebook parameters.

Further, in the Office Action of July 1st, 2005, the Examiner alleges that Lin's Figures 3 and 4 teach signal paths each comprising a pitch prediction error calculating device for calculating a pitch prediction error of a pitch codevector.

However, as indicated hereinabove, Figure 3 of Lin illustrates an exhaustive search process for the optimum innovation sequence (codebook index i and codebook index j). More specifically, Lin describes that the partial contributions of innovation sequence from the codebooks 1 and 2 are respectively supplied to correlation steps 52 and 72 in which correlations with the target vector are calculated. Therefore, prediction errors related to the innovation sequence are calculated. Accordingly and contrary to the Examiner's allegation, Lin describes no pitch prediction error calculating device in the signal paths associated to codebooks 1 and 2 as featured in claim 1.

In the same manner, Lin's filters 50 and 68 of Figure 3 processes partial contributions of an innovation sequence. Therefore, Lin describes no filter for filtering a pitch codevector in the signal paths as featured in claim 1.

Yet further, the peak selection 62 of Figure 3 of Lin is responsive to correlations between the innovation sequence contributions from codebooks 1

and 2 and the target vector. Accordingly, Lin describes no selector for comparing the pitch prediction errors calculated in the signal paths and for choosing the signal path having the lowest calculated pitch prediction error as featured in claim 1.

For at least the reasons stated above, independent claim 1 is distinguishable over Lin.

Like claim 1, claim 10 also relates to the production of a set of pitch codebook parameters. It has been amply demonstrated above that the subject matter of this claim cannot be anticipated by a technique for searching an optimum innovation sequence in a CELP encoder as taught by Lin. This alone is sufficient to distinguish claim 10 over Lin.

But in addition, claim 10 recites, in part "in at least two signal paths associated to respective sets of pitch codebook parameters," "calculating, for each signal path, a pitch prediction error of a pitch codevector from a pitch codebook search device," "in at least one of said two signal paths, filtering the pitch codevector" and "selecting the set of pitch codebook parameters associated to the chosen signal path." It has been demonstrated above that Lin cannot teach or suggest any of these recited features. Therefore, independent claim 10 is also distinguishable over Lin.

Claims 3, 7, 12, 16, 19, 21 and 25 depend from independent claims 1 and 10 directly or indirectly. Therefore, for at least the reasons stated with respect to claims 1 and 10 as well as on their own merits, claims 3, 7, 12, 16, 19, 21 and 25 are also distinguishable over Lin.

Applicants respectfully requests that the rejection of claims 1, 3, 7, 10, 12, 16, 19, 21 and 25 based on Lin be withdrawn.

§ 103 REJECTION – PRIMARY, SECONDARY, TERTIARY

Claims 2, 4, 9, 11, 13, 18, 20, 22, 27, 28-31, 34, 36, 37-40, 43, 45, 46-49, 52, 54, 55-58, 61 and 63 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Lin in view of Adoul et al. (US Patent 5,754,976). *See Office Action, pages 5-6, items 3-4.* Applicants respectfully traverse.

The rejected claims depend from independent claims 1 and 10 directly or indirectly. It has been demonstrated above that claims 1 and 10 are distinguishable over Lin. Adoul has not been relied upon to correct for at least the above noted deficiencies of Lin. Therefore, independent claims 1 and 10 are distinguishable over the combination of Lin and Adoul.

For at least due to the dependency thereon from claims 1 and 10 as well as on their own merits, claims 2, 4, 9, 11, 13, 18, 20, 22, 27, 28-31, 34, 36,

37-40, 43, 45, 46-49, 52, 54, 55-58, 61 and 63 are also distinguishable over the combination of Lin and Adoul.

Applicants respectfully request that the rejection of claims 2, 4, 9, 11, 13, 18, 20, 22, 27, 28-31, 34, 36, 37-40, 43, 45, 46-49, 52, 54, 55-58, 61 and 63 based on Lin and Adoul be withdrawn.

CONCLUSION

All objections and rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance. Should there be any outstanding matters that need to be resolved, the Examiner is respectfully requested to contact Hyung Sohn (Reg. No. 44,346), to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicants respectfully petition for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit

Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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